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EDITORIAL

Gastric aspiration: routine use for diagnosis of pulmonary tuberculosis patients unable to expectorate sputum

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A considerable proportion of tuberculosis (TB) patients start treatment solely based on a clinical diagnosis, with or without a supportive radiographic examination. This is at least partially related to the imperfection of the laboratory techniques and the quality, quantity, freshness and method of specimen collection.[1-3]

The report by Aslam et al. in this issue of *Public Health Action* provides useful insight into and interesting diagnostic findings with gastric aspirate (GA) specimens from adult patients unable to expectorate sputum. The setting is a hospital in Pakistan under routine practice from 2012 to 2015. It highlights the comparative efficiency of smear microscopy, culture and Xpert® MTB/RIF test results in detecting *Mycobacterium tuberculosis* (MTB).[4]

Laboratory tests on GA specimens collected from 900 examined patients identified 313 definite and 14 probable cases of pulmonary TB (PTB). As we do not know the total number of notified TB cases, one cannot know the real contribution of GA to overall case finding. Nevertheless, from the figures provided, it does not seem to be a negligible proportion and therefore calls for better quantification of the potential of GA-based diagnostic services in other health facilities by the national TB programme.

However, there is not just the potential of GA to consider; the potential shortcomings of culture must also be taken into account to judge the role of different diagnostic techniques more accurately. To optimize the yield of culture for GA specimens, several considerations are in place, foremost the approach to the complexity of pH. Acidity is harmful to *M. tuberculosis* and culture efficiency might thus have been reduced if there has been no or inadequate neutralization after specimen collection, compounded by the long delay (<24 h) to process for culture. Furthermore, the high contamination frequency (13%) is also of deep concern in any endeavor to improve the culture technique.

M. tuberculosis detection from GA specimens of new probable presumptive TB cases were not significantly different between three different laboratory techniques used. However, the Xpert assay picked significantly more positives than culture among the retreatment cases. The authors mention that this might be attributable to the presence of dead bacilli in the GA specimens. The finding of a negative culture with a simultaneously positive Xpert result is confusing, and there is no easy recipe on how to interpret it for the clinician who needs to decide on the appropriate course of action in retreatment cases, among whom one cannot readily depend on the accuracy of the culture result.

Taking these findings into account, it is essential to improve the efficiency of the primary culture for GA specimens: first, it is imperative to shorten the delay of the entire process from specimen collection, proper decontamination and centrifugation of up to and including inoculation into the culture medium; second, any instilling fluid has to be sterile and the technique should follow aseptic principles; third, sodium carbonate should preferably be added to the collection container before the specimen is added. This should facilitate neutralizing the acid.[5,6] Finally, the process may also require the addition of an antibiotic mixture to the liquid culture medium (such as PANTA in the MGIT system) to maximize the prevention of contamination, if not currently in use.

References

1 World Health Organization. Global tuberculosis report, 2016. WHO/HTM/TB/2016.13. Geneva, Switzerland, WHO 2016.
2 Rieder H L, Van Deun A, Kam K M, et al. Priorities for tuberculosis bacteriology services in low-income countries. 2nd ed. Paris, France: International Union Against Tuberculosis and Lung Disease, 2007.
3 Kim S J, Hong Y P, Lew W J, et al. Incidence of pulmonary tuberculosis in Korean civil servants. Tubercle Lung Dis 1995; 76: 534–539.
4 Aslam W, Tahseen S, Schomotzer C, et al. Gastric specimens in diagnosing tuberculosis in adults unable to expectorate sputum in Rawalpindi, Pakistan. Public Health Action 2017; 7: 60–64.
5 Kent P T, Kubica G P. Public health mycobacteriology, a guide for the level III laboratory. Atlanta, GA, USA: US Department of Health and Human Services, Public Health Service, Centers for Disease Control, 1985: p 23.
6 Pfyffer G E, Palicova F. *Mycobacterium*: general characteristics, laboratory detection, and staining procedures. In: Versalovic J, Carroll K C, Jorgensen J H, et al., eds. Manual of Clinical Microbiology; 10th ed. Vol 1-1. Washington DC, USA: American Society for Microbiology, 2011: pp 472 -502.

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